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Questionnaire

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European survey to co-design the Europa Biodiversity Observation Network (EuropaBON)

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Survey to co-design the Europa Biodiversity Observation Network EuropaBON

Your Agency, Directorate or Organisation:

A. Current State: How do you use biodiversity data in policy making?

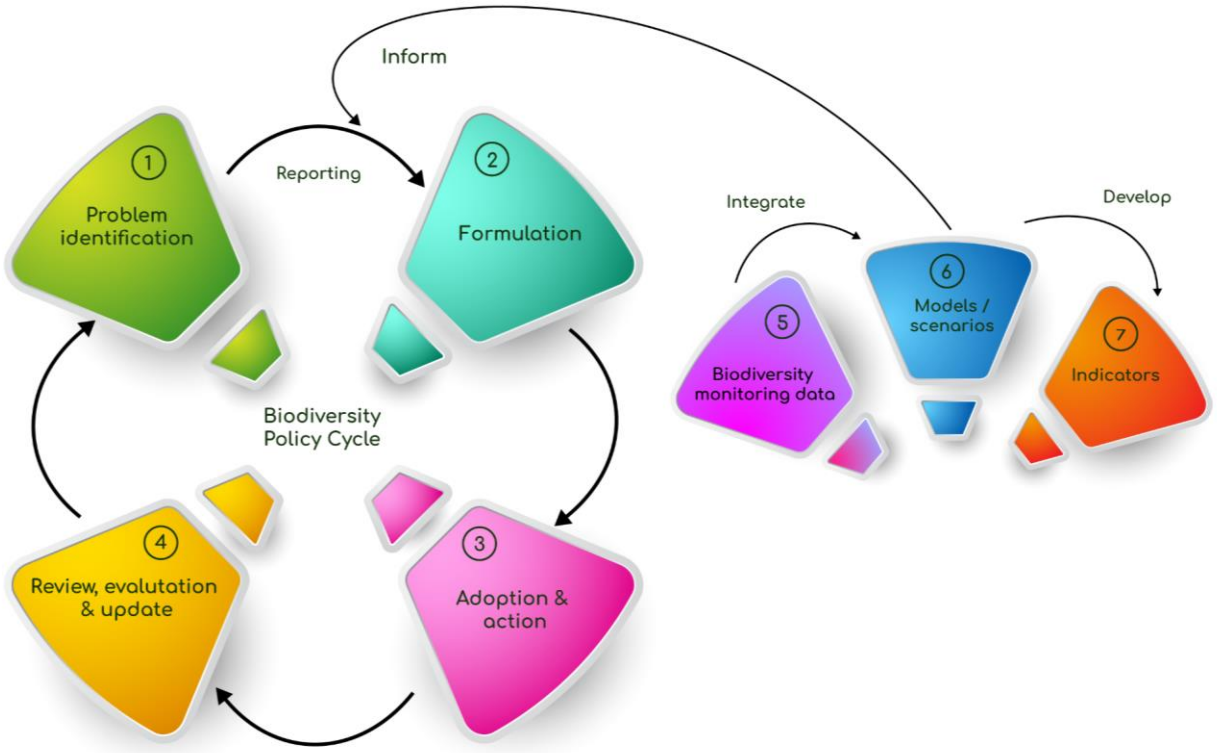

Figure 1: The four stages of the biodiversity policy cycle (1-4), including three stages of informing policy formulation (5-7) (adapted from IPBES, 2016[1]).

[1] IPBES (2016): The methodological assessment report on scenarios and models of biodiversity and ecosystem services. S. Ferrier, et al (eds.). Secretariat of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Bonn, Germany.

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1. **How are biodiversity monitoring data <u>currently</u> used for policy making at national or EU level (see figure 1)?**
   Please edit, remove, and add to the examples provided in the table.
   Column A: Which monitoring schemes are <u>currently</u> carried out in your organisation, including their frequency?
   Column B: Which EU or national policy or management action do they inform?
   Column C: What are the relevant indicators and spatial resolution used for these monitoring schemes?
   Column D: How exactly do these data lead to management action on the ground?
   Column E: Please provide any relevant weblinks on the monitoring scheme.

A **Current biodiversity monitoring scheme (and frequency)**	**B** **Relevant policy or management action at national or EU level**	**C** **Relevant indicator & spatial resolution**	**D** **How exactly does this data lead to action (decision making, planning, management)?** **Please describe**	**E** **Weblink URL to monitoring scheme**
E.g. National breeding bird survey (annually)	*Art. 12 Birds Directive / national biodiversity strategy / Ramsar sites*	*Number of breeding pairs of each bird species per km^2 (or per site or per district)*	*Data is sent to the EU for international reporting. Nationally, negative trends trigger restoration action of e.g. Ramsar wetland sites and species specific action programmes*	
E.g. Monitoring the impact of air pollution on ecosystems	*Air quality policy, reporting under Art. 9 of the National Emissions Ceiling directive*	*Ozone foliar damage to trees and crops (200 sites in the country)*	*Data is sent to the EU for international reporting. The data is used for monitoring the health of forests.*	
E.g. Monitoring of invasive alien species	*Management of natural areas, rivers and forests; EU regulation on*	*Monitoring programme based on a network of*	*Data is used for national and regional programmes that target the removal of invasive alien species (planning of resources, actions for removing IAS)*	

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	invasive alien species	*voluntary observations of invasive alien species and targeted species monitoring in areas under high risk.*		

2. Please expand your answer given in Table 1 by providing one or several concrete examples: How are biodiversity data used to identify biodiversity problems and trigger policy formulation in your organisation/directorate (figure 1, parts 1-2)?

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3. Please expand your answer given in Table 1 by providing one or several concrete examples: How have biodiversity data informed action at national or EU level (e.g. establishment of new protected areas, triggering land use change, more sustainable forest management) (figure 1, parts 3-4)?

4. Please expand your answer given in Table 1 by providing one or several concrete examples: Does your organisation/directorate integrate biodiversity data in models and scenarios, e.g. modelling distribution of habitat suitability, future trends or the consequences of interventions (figure 1, parts 5-6)?

5. Please provide one or several concrete examples: If biodiversity data is currently not (sufficiently) used for policymaking or for informing action in your organisation/directorate, what would be needed for this to happen?

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6. What is your organisation/directorate's approximate yearly budget on national biodiversity monitoring? What would incentivise an increase in this budget?

B. Challenges in biodiversity monitoring

7. **What are the main challenges you face in biodiversity monitoring and reporting, and where do you see most need for improvement?**

Ranking scale:

1 No relevance	2 Low relevance	3 Medium relevance	4 Fairly high relevance	5 Very high relevance

Challenge	**Ranking: Relevance of this challenge in your organisation/ directorate**	**Do you know any examples of how this challenge was overcome? Would this work in your organisation/directorate?**
Biased monitoring: under-representation of certain ecosystem types	Please rank here	

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Biased monitoring: under-representation of certain taxonomic groups	Please rank here	
Diversity and complexity of various biodiversity monitoring actors and users	Please rank here	
Financial resource constraints	Please rank here	
Insufficient spatial coverage of monitoring programs	Please rank here	
Lack of (raw) free data	Please rank here	
Lack of human and technical capacities	Please rank here	
Lack of integration between data at different geographic scales	Please rank here	
Lack of integration between data on different ecosystems	Please rank here	
Lack of integration between data on different taxa	Please rank here	
Lack of integration between in situ and remote sensing data	Please rank here	
Lack of long-term policies for monitoring	Please rank here	
Lack of standardised data collection methods and protocols	Please rank here	
Lack of standardised monitoring methods and protocols	Please rank here	
Monitoring frequency is too low to detect meaningful trends	Please rank here	
No international agreement on which biodiversity variables should be measured	Please rank here	
No national agreement on which biodiversity variables should be measured	Please rank here	

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Silos between different disciplines and roles	Please rank here	
Time lag between data collection and use	Please rank here	
Other:	Please rank here	

C. Desired Future State: Biodiversity monitoring variables and indicators

(This section will be reported anonymised and as a synthesis across organisations)

8. The table below lists a set of **biodiversity variables and indicators identified for a desirable future state** at the first EuropaBON Stakeholder Workshop on 26-28 May 2021. Please rank and prioritise these variables and complete the table. These variables and indicators will serve as a basis for the following questions. The instructions will guide you through each column step by step.

    a. *Columns A-D*: These are the priority desired variables that were identified by participants of the first EuropaBON workshop. If you have any comments on these variables, or their resolution, please add these in *Column G*.
    b. *Column E*: Assuming that you had no technical, budgetary or capacity restrictions, please rank each listed variable/indicator in terms of its impact on EU or national policy-making from high (5) to low (1).
    c. *Column F*: Please indicate the current monitoring status of the variable/indicator.
    d. *Column H*: Which future policy questions could these monitoring variables address, e.g. national policies or EU Directives? Please note down the relevant policy questions or specific policies/Directives, as well as any relevant links if available.

9. If you had no technical, budgetary or capacity restrictions in your organisation/directorate**,** which additional variables and indicators would you like to be monitored? Please add these to the bottom lines of the table, and fill out *Columns 1-9* for them.

Ranking scale:

1 No relevance	**2** Low relevance	**3** Medium relevance	**4** Fairly high relevance	**5** Very high relevance

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A **Desired variable/ indicator**	B **Taxa, ecosystem or other entity measured**	C **Spatial Resolu-tion**	D **Temporal Resolu-tion**	E **Ranking: impact of this variable/ indicator on EU or national policy-making**	F **Current monitoring status**	G **Comments** (examples in grey)	H **Future policy/ management question(s)** (examples in grey)
Species abundances	Birds: common	1x1km - 10x10km	1 year	Please rank here	Please indicate	E.g., These data can be used at the community level or species level; Are these data realistic/feasible to collect?	E.g., What are the trends of birds and how is the CAP affecting them?
Species abundances	Birds: rare and priority species	1x1km - 10x10km	5 years	Please rank here	Please indicate		E.g., How to prioritize and access restoration measures?
Species abundances	Birds: migratory	1x1km - 10x10km	real-time	Please rank here	Please indicate		E.g., What are mortality hot-spots and congregation areas of migratory birds?
Species distributions	Birds: all	1x1km - 10x10km	5 years	Please rank here	Please indicate		E.g., What are the overall trends and what are the main drivers?
Species distributions	Amphibians	10x10 km - 50x50km	1 year	Please rank here	Please indicate	E.g., Probably not feasible at this moment	E.g., What are the overall trends of amphibians?
Species abundances	Mammals: Carnivora, Artiodactyla and Bats	1x1km - 10x10km	1 year	Please rank here	Please indicate		
Species distributions	Mammals: all	10x10 km - 50x50km	5 year	Please rank here	Please indicate		

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Species distributions	Reptiles: all	1x1km - 10x10km	5 year	Please rank here	Please indicate		
Species abundances	Butterflies: grassland	10x10 km - 50x50km	1 year	Please rank here	Please indicate		
Species distributions	Plants: all vascular	10x10 km - 50x50km	5 year	Please rank here	Please indicate		
Species distributions	Plants: priority	1x1km - 10x10km	1 year	Please rank here	Please indicate		
Species distributions	Freshwater fish species	10x10 km - 50x50km	5 year	Please rank here	Please indicate		
Species abundances	Marine harvested fish species	50x50km - 200x200km	1 year	Please rank here	Please indicate		
Species distributions	Marine fish species	50x50km - 200x200km	5 year	Please rank here	Please indicate		
Species distributions	Invasive species	1x1km - 10x10km	5 year	Please rank here	Please indicate		
Taxonomic/functional diversity, and biomass	Arthropods	1x1km - 10x10km	1yr-3yr	Please rank here	Please indicate		

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Community abundance	Pollinator insects	1x1km - 10x10km	1 year	Please rank here	Please indicate		
Taxonomic/functional diversity	Soil biota: invertebrates, fungi and microbiota	1x1km - 10x10km	1 year	Please rank here	Please indicate		
Taxonomic/functional diversity and abundance	Marine/transitional plants, diatoms, zooplankton, macro-invertebrates	10x10km - 50x50km	seasonal to 1 year	Please rank here	Please indicate		
Taxonomic/functional diversity and biomass	Freshwater and transitional phytoplankton, zooplankton, phytobenthos, benthic invertebrates, macroalgae	10x10 km - 50x50km	1 year, real-time for bloom events (harmful algal blooms)	Please rank here	Please indicate		
Interaction diversity	Insect predator-prey networks	50x50km - 200x200km	1 year (sampled at multiple seasons)	Please rank here	Please indicate		

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Intraspecific genetic diversity	Priority taxa in Birds and Habitats directive (e.g. all Annex II species)	50x50km - 200x200km	10 years	Please rank here	Please indicate		
Effective size and/or inbreeding	Priority taxa in Birds and Habitats directive (e.g. all Annex II species)	50x50km - 200x200km	10 years	Please rank here	Please indicate		
Intraspecific genetic diversity	Trees	50x50km - 200x200km	10 years	Please rank here	Please indicate		
Phenology	Selected species: flowering and leaf senescence (plants); migration dates (birds)	10x10 km - 50x50km	1 - 10 years	Please rank here	Please indicate		
Morphology: body mass	Fishes: harvested species	50x50km - 200x200km	1 year	Please rank here	Please indicate		
Ecosystem distribution: extent	Land-use/land cover change	100x100m - 1x1km	1 year	Please rank here	Please indicate		

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Ecosystem distribution: extent	Habitats in Habitats Directive/ EUNIS Habitats	100x100m - 1x1 km	1 year	Please rank here	Please indicate		
Ecosystem distribution: connectivity	Vegetation types	1x1km - 10x10km	1 year	Please rank here	Please indicate		
Ecosystem vertical profile (e.g. vegetation height)	Vegetation	10x10m - 100x100m	1 year	Please rank here	Please indicate		
Primary productivity	Plants	100x100m - 1x1 km	Yearly depending of taxa	Please rank here	Please indicate		
Ecosystem phenology	Tree phenology	1x1km - 10x10km	1 year	Please rank here	Please indicate		
Regulating services	Belowground carbon content	100x100m - 1x1km	3 years	Please rank here	Please indicate		
Regulating services	Level of service based on species diversity or species providing units	100x100m - 1x1km	annual	Please rank here	Please indicate		

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Regulating services	Regulation of freshwater quality	100x100m - 1x1km	6 months or 1 year	Please rank here	Please indicate		
Regulating (dis)services	Harmful algal blooms threatening recreation and provisioning services	1x1km - 10x10km	real-time, weekly or monthly	Please rank here	Please indicate		
Regulating services	Completeness of apex predators	10 x 10 km - 50 x 50 km	1 year	Please rank here	Please indicate		
Regulating (dis)services	Crop pest risk in agriculture	100x100m - 1x1km		Please rank here	Please indicate		
Provisioning services	Mushroom and wild fruits production	1x1km - 10x10km	weekly	Please rank here	Please indicate		
Regulating (dis)services	Risk of infection by animal vectors	10x10 km - 50x50km	real time	Please rank here	Please indicate		
Regulating services	Elimination of carcasses by scavengers	10x10 km - 50x50km	1 year	Please rank here	Please indicate		

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Regulating services	Economic value of pollination and seed dispersal	1x1km - 10x10km	1 year	Please rank here	Please indicate		
Provisioning services	Fish harvest	10x10 km - 50x50km	1 year	Please rank here	Please indicate		
Non-material benefits	Public visitation rates to protected areas	10x10 km - 50x50km	1 year	Please rank here	Please indicate		
Non-material benefits	Recreation value from landscapes	1x1km - 10x10km	1 year	Please rank here	Please indicate		
Add other biodiversity variables here if needed				Please rank here	Please indicate		
				Please rank here	Please indicate		
				Please rank here	Please indicate		
				Please rank here	Please indicate		

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D. European Biodiversity Monitoring Observation Network

10. **What will be the most important benefit of a European Biodiversity Observation Network[2] to biodiversity monitoring and reporting within your organisation/directorate in the next 5-10 years?** (E.g. data standardisation across Europe; enhanced national biodiversity reporting; filling data gaps; enabling coordinated action; etc.)

11. **How could your organisation/directorate contribute to a European Biodiversity Observation Network in the next 1-5 years?**

Please provide the names and email addresses of all experts who contributed to this survey (*for internal information only; names and contact details will not be published*)**:**

[2] EuropaBON aims at creating an active European Biodiversity Observation Network of policymakers, data providers, data users, and researchers at local, national and European levels to identify data needs of policies and targets aligned with the new European Green Deal. Its mission is to overcome existing data gaps and workflow bottlenecks by designing an EU-wide framework for monitoring biodiversity and ecosystem services.